

IN THE CLAIMS:

1 1. (Currently Amended) A process for the wet fractionation of cereal bran obtained from
2 after a primary milling of one or more of the cereals of the group comprising wheat, barley, oat,
3 rye and triticale resulting in the substantial removal of the endosperm, into protein, sugar and
4 insoluble fractions, [[the]] a process wherein bran substantially devoid of the endosperm fraction
5 is subjected to a first enzymatic treatment, utilizing a combination of enzymes of the group
6 containing starch-hydrolysing enzymes, and aqueous wet milling, enzyme inactivation by wet
7 heat treatment, and a separation followed by a separating step whereby resultant aqueous
8 slurry/suspension is separated into an insoluble fibrous fraction and a soluble fraction, whereby
9 said soluble fraction is further separated by centrifugal forces into a germ-rich fraction and an
10 endosperm- and sugar-rich fraction, [[and]] said endosperm- and sugar-rich fraction is further
11 separated into proteins and sugars and;

12 said insoluble fibrous fraction containing a cleaned bran consisting of both insoluble
13 pericarp and aleurone fractions, is further subjected to a hydrolyation hydrolyzation by a second
14 enzymatic treatment utilizing a combination of one or a mixture of enzymes of the group non-
15 starch polysaccharidases, and aqueous wet-milling, enzyme inactivation by wet heat treatment,
16 and a subsequent step whereby the resultant hydrolysate is separated into an insoluble phase and
17 a soluble phase.

1 2. (Canceled)

1 3. (Previously Presented) A process according to claim 1, wherein the first enzymatic
2 treatment is accomplished using a starch degrading enzyme of the groups amylases and

3 amyloglucosidases.

1 4. (Previously Presented) A process according to claim 1, wherein the second
2 enzymatic treatment is carried out using at least one non-starch degrading polysaccharidase in
3 the form of cellulases, hemicellulases mainly xylanases, beta-glucanases, and pectinases, and/or
4 phytases.

1 5. (Canceled)

1 6. (Previously Presented) A process according to claim 1, wherein the insoluble phase
2 obtained from the hydrolysate and containing primarily insoluble fibers, of the group comprising
3 cellulose, lignin, less accessible hemicellulose, residual aleurone cells and cell wall bound
4 proteins is spray dried, and;
5 the soluble phase obtained from the hydrolysate containing soluble hemicellulose,
6 oligosaccharides, sugars and proteins, and said soluble phase is further separated into a heavy
7 phase containing mainly aleurone cell protein and a light phase containing hemicellulose in the
8 form of soluble hemicellulose and oligosaccharides, and;
9 said light phase is further separated by size exclusion technique into soluble hemicellulose
10 (medium molecular size fraction) and oligosaccharides mixed with sugars (small molecular size
11 fraction).

1 7. (Previously Presented) A process according to claim 1, wherein cleaned bran is cereal
2 bran substantially free of both in water or less polar solvents soluble compounds, derived from
3 wheat, barley, oat, rye or triticale.

1 8. (Previously Presented) A process according to claim 1, wherein the combination of
2 intermittent wet milling with enzymatic treatment is arranged to increase the rate of enzymatic
3 hydrolysis of the substrate thereby improving the overall hydrolysis performance and the
4 subsequent separation of the various fractions by density/solubility and molecular size.

1 9. (Canceled)

1 10. (Previously Presented) A process according to claim 4, wherein the second
2 enzymatic treatment is accomplished using xylanases with high beta 1-4-xylanase (pentosanase)
3 and/or beta-glucanase activity.

1 11-39. (Canceled)

1 40. (Withdrawn) A set up for carrying out the process according to claim 1, wherein it
2 comprises a hydrolysis vessel, a wet mill, a heat exchange for enzymatic inactivation, decanters,
3 a holding tank, an ultra-filter, and optionally at least an evaporator, and dryers.

1 41. (Withdrawn) A set up for carrying out the process according to claim 5, wherein it
2 comprises a hydrolysis vessels, a wet mill, a heat exchange for enzymatic inactivation, decanters,
3 a holding tank, an ultra-filter, and optionally evaporators, and dryers.

1 42. (Currently Amended) A process according to claim 1, wherein the first enzymatic
2 treatment is carried out for less than 3 hours at a pH of 4 to 7.5[[and]], at a temperature [[of]]
3 from 50 to 90°C, and at an enzymatic activity of at least 1 IU/g of substrate, preferably 200 to
4 1500 IU/g of substrate.

1 43. (Currently Amended) A process according to claim 1, wherein the second enzymatic
2 treatment is carried out for less than 3 hours at a pH of 4 to 7, ~~preferably 4.5-5.5~~, and at a
3 temperature [[of]] from 35 to 80°C, and at an enzymatic activity of at least 1 IU/g of substrate;
4 ~~preferably 200 to 1500 IU/g of substrate.~~

1 44. (Canceled)

1 45. (New) A process according to claim 42, wherein the first enzymatic treatment is
2 carried out for less than 3 hours at a pH of 4.5 to 7 and at a temperature from 50 to 75°C, at an
3 enzymatic activity of at least 200 to 1500 IU/g of substrate.

1 46. (New) A process according to claim 43, wherein the first enzymatic treatment is
2 carried out for less than 3 hours at a pH of 4.5 to 5.5 and at a temperature from 40 to 50°C, at an
3 enzymatic activity of at least 200 to 1500 IU/g of substrate.

1 47. (New) A process according to claim 1, wherein the first enzymatic treatment and
2 aqueous wet milling is followed by an enzyme inactivation by wet heat treatment.

1 48. (New) A process according to claim 1, wherein the second enzymatic treatment and
2 aqueous wet milling is followed by an enzyme inactivation by wet heat treatment.